



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,594	03/27/2002	John Adrian Lightfoot	UDLIP070	2483
22434	7590	10/07/2003	EXAMINER	
BEYER WEAVER & THOMAS LLP			GABOR, OTILIA	
P.O. BOX 778			ART UNIT	
BERKELEY, CA 94704-0778			PAPER NUMBER	

2878

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/089,594	Applicant(s) LIGHTFOOT ET AL.	
	Examiner Otilia Gabor	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 27 March 2002.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-36 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-36 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 27 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>06/27/02</u>	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Claim Objections

1. Claims 1-36 are objected to because of the following informalities: claim 1 contains the symbol ":" in lines 2, 9. Appropriate correction is required.

The balance of the rest of the claims is objected to for being dependent from an objected claim.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 31-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 31 recites the limitation "the consideration" in line 1. There is insufficient antecedent basis for this limitation in the claim.

The term "consideration" in claim 1 from which claim 31 is dependent refers to considering a count rate against another count rate and not considering a particular field of view that is indicative of radioactive sources. As such, the term "the consideration" in claim 31 has no antecedent basis for it refers to a different type of consideration not previously disclosed.

5. Regarding claim 32, the phrase "may be" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

The term "may" renders the claim indefinite since it is unclear whether or not the selection of the areas is a required limitation in the claim.

The balance of claims 33-35 is rejected as being dependent from a rejected claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-4, 6-13, 18, 30-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Benke et al. (U. S. Patent 6528797 B1).

Benke et al. discloses a method and system for investigating emissions from radioactive sources present in the environment (soil, airborne plume, building materials including steel and concrete, etc.), the method comprising:

- providing an instrument (portable), the instrument including a detector assembly which includes a detector (see Figs.2, 4-8d) which generates a signal in response to a detected emission from a radioactive source (a, b, c, in Fig.4) in the medium, the detector being surrounded by a collimator (see Figs.4-7) in order to provide a greater shielding against emissions in one or more directions than against emissions in other

directions in order to define a field of view of the environment for the detector (i.e., the detector is subjected only to emissions coming from a particular field of view and is shielded against emissions from any other direction). See especially Figs.6 and 7 where the detector has a field of view defined by the collimator shielding around the detector.

- providing the instrument with a moveable shielding component relative to the field of view (see Figs.8a-8d), i.e., the collimator shielding can be moved in or out the defined field of view of the detector
- obtaining a signal count from the detector with the collimator shield not in the field of view of the detector (i.e., a signal count for a first polar angle position – reference count signal) (see Figs.6, 7, 8c)
- obtaining a signal count from the detector with the collimator shield partially obstructing the field of view of the detector (i.e., a signal count for a second polar angle position) (see Figs.4, 5, 8a, 8b, 8d)
- processing the signal counts obtained from the obstructed and non-obstructed fields of view together to provide information about emission arising from the given field of view.

In operation, the system detects the emissions arising from radioactive sources present in the sampled environment by utilizing a special shielding method whereby the detector's field of view is increasingly obstructed using either a movable shielding collimator (see Figs.8a, 8b, 8d) or by moving the detector to a different position relative to the system (see Figs.5-7, 8c) and processing the signal counts obtained at these different configurations. By obstructing the field of

view of the detector using the shield, the detector detects emissions coming from a particular polar angle. The measurements are repeated at different polar angles by moving the shield to different configurations (i.e., it shields the field of view in different positions) and the signal counts are processed together in order to determine the exact 2D or 3D position (claim 12) of the radioactive source in the sample medium. The count signals detected by the detector are indicative of the presence of a radioactive source in the sample medium if the counts are not attenuated (claim 31).

Regarding claim 2, Benke et al. discloses in the embodiment of Figs.4 and 5 the method of obtaining a signal count for an initial field of view (Fig.4) and obtaining another signal count for a different field of view obtained by moving the detector from an initial position to a second and third positions in order to obtain information from one or more areas of the environment under investigation. The signals obtained from the detectors at different positions and the different fields of view and the signals obtained from the obstructed positions are processed together in order to determine the position of the radioactive sources in the medium.

Regarding claims 3, 4, 30 and 32, in Benke et al. the signals are obtained for overlapping fields of view (see Figs.6, 7 where the field of view in the last position of the detector in Fig.7 is smaller than the field of view of the detector in the first position in Fig.6, but the views are overlapping) and for sequentially adjoining fields of view (see Figs.4, 5 where the fields of view are sequential from the center of the sample medium outwards).

Regarding claims 6, 7, 32-35 and 36, Benke uses different shielding configurations to occlude different parts of the fields of view (see Fig.5) and uses the obtained signal counts for all these configurations in its final signal processing.

Regarding claims 8-11, Benke discloses using configurations where the detector is fixed and the collimator shielding is moved to restrict the detector field of view or where the detector is moved and the shield is fixed, and also configurations where the field of view is changed (Figs.6, 7,8c) or where the field of view is fixed but the view is occluded (Figs.4, 8a, 8b). For every configuration all signal counts are used in the final processing.

Regarding claim 13, the source location is determined using information about the azimuthal ϕ and polar angles θ (tilt and pan angles) as well as the distance r between the detector and the source (a, b or c) (see Fig.2 and Col.9, lines 26-68, Col.10, lines 1-60).

Regarding claim 18, the shield disclosed in Benke includes a first generally planar component and a second generally planar component with a gap between them, the gap defining the field of view of the detector (see Fig.8c).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 5, 16, 17, 19-26, 28, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benke et al. (U. S. Patent 6528797 B1).

Regarding claim 5, Benke fails to disclose that the consideration of counts for different fields of view is done by considering only the fields of view having a count rate above a selected threshold level, however this would have been obvious to one of ordinary skill in the art at the time the invention was made since it is well known in the art that in order to increase the accuracy in the measurement of determining the exact location of a source, the signals detected that do not pass a minimum threshold level are discarded. Otherwise, measurement errors in the form of noise are introduced in the final signal processing.

Regarding claims 16, 17, 22 and 23, Benke discloses different embodiments where the detector system is fixed and the collimator shield is

rotatably movable around a pivot (see Fig.8d) or an axis (see Fig.8a) or when the shield is fixed and the detector is movable (see Figs.5-7, 8c) or when the detector/shield system is rotatable together around the same axis (see Fig.8b), however he does not disclose that the detector and the shield are rotatably movable around different axis which are perpendicular to each other, however since he does not limit the possible configurations to the ones exemplarily disclosed (see Col.14, lines 58-68 and Col.15, lines1-12) and since he allows for any other alternative configurations and designs suitable for a particular use, using the claimed configurations is justified since it constitutes an obvious matter of design choice because provisions for adjustability involves only routine skill in the art. *In re Stevens*, 101 USPQ 284 (CCPA 1954).

Regarding claims 19, 24 and 25, Benke fails to disclose the specified shielding configuration, however, since he does not limit the possible configurations to the ones exemplarily disclosed (see Col.14, lines 58-68 and Col.15, lines1-12) and since he allows for any other alternative configurations and designs suitable for a particular use, using the claimed configurations is justified since it constitutes an obvious matter of design choice because provisions for adjustability involves only routine skill in the art. *In re Stevens*, 101 USPQ 284 (CCPA 1954).

Regarding claims 20 and 21, Benke et al. does not specifically define the angular extent of the field of view as between 4.5 and 6 degrees in one direction and between 160 and 200 degrees in a second direction, however, according to the cited polar angle viewing disclosed in Col.7, lines 60-62, the

detector is capable of viewing in the range of 0 to 80 degrees with the shield in place and according to the embodiment of Fig.8d when the shielding is in a position perpendicular to the source medium (i.e., in its starting position) the field of view is unlimited. Therefore, though the exact angles are not disclosed by Benke, the different possible embodiments allow for the specific angle range and thus using the claimed angle ranges would have been obvious to one of ordinary skill in the art at the time the invention was made since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding claim 26, Benke does not specifically disclose that the shield obscures between 5 and 10 % of the field of view, however, according to the enumerated detector/shield configurations and the disclosed polar angle viewings possible using the shield it is inherent that the shield can obscure all or nothing of the detector's field of view (see Fig.8d where the shield can obscure almost the entire field of view when in a position parallel to the source medium and almost nothing when it is in a position perpendicular to the field). As such, having a configuration where the shield obscures only between 5 to 10% of the field of view constitutes only a matter of design choice since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding claim 28, Benke fails to specify how the detector system is introduced into the environment to be measured, however since he discloses that his system can be used in many different environments where the radioactivity of a source needs to be measured (radioactivity in tanks, drums, pipes, see Col.5, lines 55-61), it would have been obvious to one of ordinary skill in the art to have the detector system be introduced into the tank or pipe through the aperture of the tank or pipe since that would be one of the easier ways of letting the detector get in contact with the radioactive sources present in the tank or pipe. Since Benke does not disclose the specifics of the measurements in pipes or tanks he fails to disclose the measurements of the aperture, however this constitutes an obvious matter of design choice since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)), and since a change in size is generally recognized as being within the level of ordinary skill in the art (*In re Rose*, 105 USPQ 237 (CCPA 1955)).

Regarding claim 29, Benke does not specify the time period when the emission counts are detected, however he does not limit detection to any specific time period. As such, it would have been obvious to one of ordinary skill in the art to use a count period of less than 5 minutes since the Applicant did not disclose that using this particular time period solves any stated problems or is for any particular purpose and since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

11. Claims 14, 15, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benke et al. and further in view of Hansford et al. (U. S. Patent 5739845 A).

Benke et al. fails to include a camera on the shield in order to take images of the radioactive environment, however one of ordinary skill in the art would have been motivated to include a camera on the shielding since as disclosed by Hansford et al. mounting a camera 31 onto the shielding 33 to take images of the interior of the environment where the radioactive sources are present beneficially allows a scene inside a hazardous radioactive enclosure to be optically monitored and rapid actions to be taken in case of danger. Since the detection system of Benke can be used in nuclear power industry where the conditions are very hazardous, it would be beneficial to include a camera as disclosed by Hansford et al. to monitor the dangerous environment.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Otilia Gabor whose telephone number is 703-305-0384. The examiner can normally be reached on Monday-Friday between 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 703-308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Application/Control Number: 10/089,594
Art Unit: 2878

Page 12

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

og
Otilia Gabor
AU 2878
CP4 6B20

A handwritten signature in cursive script, appearing to read "Otilia Gabor", written in black ink.